CLAIMES

1. A back-illuminated photodetector manufacturing method comprising the steps of:

forming a charge reading portion at one surface side of a semiconductor substrate;

thinning a region of the other surface side of the semiconductor substrate that corresponds to the charge reading portion while leaving regions peripheral to the region;

forming an accumulation layer at the other surface side of the semiconductor substrate;

forming, at a region of the one surface side of the semiconductor substrate corresponding to a the peripheral region, an electrical wiring, electrically connected to the charge reading portion, and an electrode pad, electrically connected to the electrical wiring;

adhering a supporting substrate on the one surface side of the semiconductor substrate so as to cover the charge reading portion while leaving the electrode pad exposed; and

cutting the semiconductor substrate and the supporting substrate at a thinned portion of the semiconductor substrate so as to leave the peripheral region corresponding to the region at which the electrical wiring and the electrode pad are formed.

2. The back-illuminated photodetector manufacturing method according to Claim 1, further comprising the steps of:

preparing a package having an electrode pad; and

mounting the semiconductor substrate and the supporting substrate, which have been cut at the thinned portion of the

semiconductor substrate onto the package; and wherein

the step of mounting onto the package comprises the steps of:

adhering the peripheral region corresponding to the region at which the electrical wiring and the electrode pad are formed, onto the package;

electrically connecting the electrode pad of the package and the electrode pad formed on the semiconductor substrate by a bonding wire; and

adhering a protective plate onto the supporting substrate and the package so as to cover the bonding wire and both the electrode pads.

3. The back-illuminated photodetector manufacturing method according to Claim 1, further comprising the steps of:

preparing a package having an electrode pad and having an opening formed at a position corresponding to the electrode pad; and

mounting the semiconductor substrate and the supporting substrate, which have been cut at the thinned portion of the semiconductor substrate onto the package; and wherein

the step of mounting onto the package comprises the steps of:

adhering the supporting substrate onto the package to fix the semiconductor substrate and the supporting substrate, which have been cut at the thinned portion of the semiconductor substrate onto the package;

electrically connecting the electrode pad of the package and the electrode pad formed on the semiconductor substrate by a bonding wire from the opening; and

adhering a protective plate onto the package so as to close off

the opening.

4. The back-illuminated photodetector manufacturing method according to Claim 2 or 3, further comprising, after the step of mounting onto the package, the step of positioning a plurality of the packages, onto each of which the semiconductor substrate and the supporting substrate have been mounted, so that the thinned portions of the semiconductor substrates are positioned adjacent each other.

5. The back-illuminated photodetector manufacturing method according to Claim 1, further comprising the steps of:

preparing a package having electrode pads; and

mounting a plurality of the semiconductor substrates and the supporting substrates, which have been cut at the thinned portions of the semiconductor substrates, onto the package; and wherein

the step of plural mounting onto the package comprises the steps of:

positioning the plurality of the semiconductor substrates and the supporting substrates, which have been cut at the thinned portions of the semiconductor substrates, so that the thinned portions of the semiconductor substrates are positioned adjacent each other and adhering the peripheral regions, corresponding to the regions at which the electrical wirings and the electrode pads are formed, respectively onto the package;

electrically connecting the electrode pads of the package and the electrode pads, formed on the semiconductor substrates, by bonding wires; and

adhering a protective plate onto the supporting substrates and

the package so as to cover the bonding wires and both the electrode pads.

6. The back-illuminated photodetector manufacturing method according to Claim 1, further comprising the steps of:

preparing a package having electrode pads and having openings formed at positions corresponding to the electrode pads; and

mounting a plurality of the semiconductor substrates and the supporting substrates, which have been cut at the thinned portions of the semiconductor substrates, onto the package; and wherein

the step of plural mounting onto the package comprises the steps of:

positioning the plurality of the semiconductor substrates and the supporting substrates, which have been cut at the thinned portions of the semiconductor substrates, so that the thinned portions of the semiconductor substrates are positioned adjacent each other and adhering the supporting substrates respectively onto the package;

electrically connecting the electrode pads of the package and the electrode pads, formed on the semiconductor substrates, by bonding wires from the openings; and

adhering a protective plate onto the package so as to close off the openings.